# **DRAFT**

# **HEALTH ADVISORY**

SAFE EATING GUIDELINES FOR FISH FROM THE LOWER FEATHER RIVER (BUTTE, YUBA, AND SUTTER COUNTIES)

August 2006

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### **EXECUTIVE SUMMARY**

Mercury levels were evaluated in edible fish tissue from the lower Feather River in Butte, Yuba, and Sutter counties, areas possibly affected by historic gold mining. The lower Feather River includes portions of the river from the Fish Barrier Dam to the confluence with the Sacramento River. Mercury levels in fish were collected and analyzed through the Toxic Substances Monitoring Program (TSMP), the CALFED Mercury Project, and the Sacramento River Watershed Program (SRWP). A number of chlorinated hydrocarbon contaminants, including chlordane, DDTs, and PCBs, were also measured in fish and obtained through TSMP and SRWP. Data were evaluated by the Office of Environmental Health Hazard Assessment (OEHHA) in an effort to determine whether there may be potential adverse health effects associated with the consumption of sport fish from this water body.

Almost all fish contain detectible levels of mercury, more than 95 percent of which occurs as methylmercury, a highly toxic form of the element. Consumption of fish is the major route of exposure to methylmercury in the United States. The critical target of methylmercury toxicity is the nervous system, particularly in developing organisms such as the fetus and young children. Significant methylmercury toxicity can occur to the fetus during pregnancy even in the absence of symptoms in the mother. In 1985, the United States Environmental Protection Agency (U.S. EPA) set a reference dose (RfD, that is the daily exposure likely to be without significant risk of deleterious health effects during a lifetime) for methylmercury of 3x10<sup>-4</sup> mg/kg-day, based on central nervous system effects (ataxia and paresthesias) in adults. In 1995, and confirmed in 2001, this RfD was lowered to 1x10<sup>-4</sup> mg/kg-day, based on developmental neurologic abnormalities in infants exposed *in utero*, using the Iraqi and Faroe Island data, respectively. OEHHA finds convincing evidence that the fetus is more sensitive than adults to the neurotoxic effects of mercury, but also recognizes that fish can play an important role in a healthy diet, particularly when it replaces other, higher fat sources of protein. Numerous human and animal studies have shown that fish oils have beneficial cardiovascular and neurological effects. Because it is important to protect the most sensitive population without unduly restricting fish consumption in others, OEHHA chooses to use both the current and previous U.S. EPA reference doses for two distinct population groups. In these guidelines, the current RfD based on effects in infants will be used for women of childbearing age and children aged 17 and younger. The previous RfD, based on effects in adults, will be used for women beyond their childbearing years and men.

In order to provide safe eating guidelines for various fish species, contaminant concentrations in fish from a water body are compared to OEHHA guidance tissue levels for those chemicals, which are designed so that individuals consuming no more than a preset number of meals should not exceed the RfD or an accepted cancer risk level. Best professional judgment is used to determine the most appropriate data evaluation approach as well as the most suitable method to convert a complex data set into more simplified and unified consumption advice for risk communication purposes. Ultimately, safe eating guidelines identify those fish species with high contaminant levels whose consumption should be restricted (see the "Eat in Moderation" table) or avoided altogether (see the "Avoid" table), as well as those low-contaminant fish that may be consumed frequently as part of a healthy diet (see the "Eat Freely" table). A statistically representative sample size was available to provide safe eating guidelines for largemouth bass,

white catfish, channel catfish, Sacramento pikeminnow, Sacramento sucker, redear sunfish, and carp. Supporting data (such as mercury concentration for a closely related species at a similar trophic level) were used to develop additional consumption guidelines for other black bass species, striped bass, and additional sunfish species from the lower Feather River.

All individuals, especially women of childbearing age and children aged 17 and younger, are advised to follow the safe eating guidelines to ensure that methylmercury ingestion does not exceed the reference dose. To help sport fish consumers achieve this goal, OEHHA has developed guidelines for all fish species caught in the lower Feather River. Meal sizes should be adjusted to body weight as described in the safe eating guidelines table.

For general advice on how to limit your exposure to chemical contaminants in sport fish (e.g., eating smaller fish of legal size), as well as a fact sheet on methylmercury in sport fish, see the California Sport Fish Consumption Advisories (<a href="http://www.oehha.ca.gov/fish.html">http://www.oehha.ca.gov/fish.html</a>) and Appendices 1 and 2. Advice for other California water bodies can be found online at: <a href="http://www.oehha.ca.gov/fish/so\_cal/index.html">http://www.oehha.ca.gov/fish/so\_cal/index.html</a>. It should be noted that, unlike the case for many chlorinated hydrocarbon contaminants, such as DDTs and PCBs, various cooking and cleaning techniques will not reduce the methylmercury content of fish.

# SAFE EATING GUIDELINES FISH CONSUMPTION FROM THE LOWER FEATHER RIVER

Fish are nutritious and should be part of a healthy, balanced diet. It is important, however, to choose your fish wisely. The American Heart Association recommends that healthy adults eat at least two meals of fish a week. OEHHA recommends that you choose fish to eat that are low in mercury such as those in the "Enjoy" category. Because some types of fish from the lower Feather River contain higher levels of mercury, OEHHA provides the recommendations below that you can follow to reduce the risks from exposure to mercury in fish.



Women of childbearing age, pregnant or breastfeeding women, and Children 17 years and younger

ENJOY UP TO 2 MEALS A WEEK	
Sunfish <i>OR</i>	
EAT IN MODERATION NO MORE THAN 1 MEAL A WEEK	
Carp or Sacramento sucker	
AVOID NO MORE THAN 1 MEAL A MONTH	
DO NOT EAT	Striped bass or Sacramento pikeminnow
NO MORE THAN 1 MEAL A MONTH	Largemouth, smallmouth or spotted bass; or catfish



## Women beyond childbearing age and men

W II
ENJOY UP TO 2 MEALS A WEEK
Sunfish*, carp, Sacramento sucker, or channel catfish <i>OR</i>
EAT IN MODERATION NO MORE THAN 1 MEAL A WEEK
Largemouth, smallmouth, or spotted bass; or white catfish
AVOID NO MORE THAN 1 MEAL A MONTH
Striped bass or Sacramento pikeminnow

\*Sunfish may be eaten up to 3 times per week by this population.

- CONTACT WITH THE WATER IS SAFE.
- EAT SMALLER FISH OF LEGAL SIZE. Fish build up mercury in their bodies as they grow.
- MEAL SIZE DEPENDS ON BODY WEIGHT. Meals are based on a 160 lb adult eating 8 ounces of fish (6 ounces after cooking)—about the size of two decks of cards. If you weigh less than 160 lbs, eat smaller portions of fish. Serve smaller meals to children.
- **DO NOT COMBINE FISH CONSUMPTION ADVICE.** Do not eat more than one of the listed fish species during the same time period unless you are eating from the Enjoy (green) category. If you eat fish from one place, following the advisory, avoid eating fish from other sources during the same time period.
- CONSIDER THE FISH YOU BUY FROM STORES AND RESTAURANTS. Women of childbearing age and children can safely eat up to 2 meals a week of most fish purchased in a store or restaurant, OR use this guide for eating fish caught from this water body. In a week when you eat 2 meals of fish purchased from stores or restaurants, avoid eating fish caught from a local water body. Commercial fish such as shrimp, king crab, scallops, farmed catfish, wild ocean salmon, oysters, tilapia, flounder, and sole generally contain some of the lowest levels of mercury. Women of childbearing age and children should not eat shark or swordfish, which contain the most mercury.
- FISH FROM OTHER WATER BODIES MAY ALSO CONTAIN MERCURY. Not all water bodies in California have been tested. With the exception of ocean or river-run salmon and steelhead, which generally contain low levels of contaminants, fish caught from places without safe eating guidelines should be eaten in limited amounts.

Draft Fish Consumption Guidelines for the Lower Feather River (Butte, Yuba and Sutter Counties)

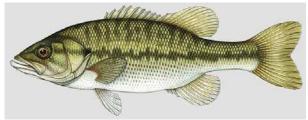
## LOWER FEATHER RIVER SPORT FISH



Largemouth Bass Micropterus salmoides D Raver USFWS



Smallmouth Bass Micropterus dolomieu D Raver USFWS



Spotted Bass Micropterus punctulatus Ohio DNR



Striped Bass Morone saxatilis D Raver USFWS



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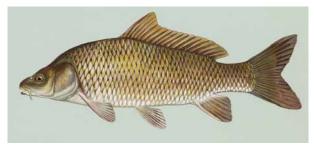
Channel Catfish Ictaluru punctatus D Raver USFWS



Sacramento Pikeminnow Ptycheilus grandis R Reyes USBR



Sacramento Sucker Catostomus occidentalis R. Reyes USBR

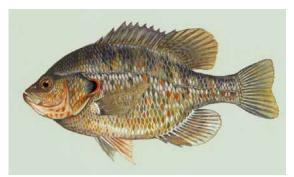


Common Carp Cyprinus carpio D Raver USFWS



Bluegill Lepomis macrochirus D Raver USFWS

Draft Fish Consumption Guidelines for the Lower Feather River (Butte, Yuba and Sutter Counties)



Redear sunfish Lepomis microlophus D Raver USFWS